G. The dumping, deposition, or discharge of waste directly into waters of the State, or adjacent to such waters in any manner which may permit it's being transported into the waters, is prohibited unless authorized by the San Diego Water Board.

H. Any discharge to a storm water conveyance system that is not composed entirely of storm water is prohibited unless authorized by the San Diego Water Board. [The federal regulations, 40 CFR section 122.26(b)(13), define storm water as storm water runoff, snow melt runoff, and surface runoff and drainage. 40 CFR section 122.26(b)(2) defines an illicit discharge as any discharge to a storm water conveyance system that is not composed entirely of storm water except discharges pursuant to an NPDES permit and discharges resulting from firefighting activities.] [section 122.26 amended at 56 FR 56553, November 5, 1991; 57 FR 11412, April 2, 1992].

I. The unauthorized discharge of treated or untreated sewage to waters of the State or to a storm water conveyance system is prohibited.

J. The discharge of industrial wastes to conventional septic tank/ subsurface disposal systems, except as authorized by the terms described in Water Code section 13264, is prohibited.

K. The discharge of radioactive wastes amenable to alternative methods of disposal into the waters of the State is prohibited.

L. The discharge of any radiological, chemical, or biological warfare agent into waters of the State is prohibited.

M. The discharge of waste into a natural or excavated site below historic water levels is prohibited unless the discharge is authorized by the San Diego Water Board.

N. The discharge of sand, silt, clay, or other earthen materials from any activity, including land grading and construction, in quantities which cause deleterious bottom deposits, turbidity or discoloration in waters of the State or which unreasonably affect, or threaten to affect, beneficial uses of such waters is prohibited.

O. The discharge of treated or untreated sewage from vessels to Mission Bay, Oceanside Harbor, Dana Point Harbor, or other small boat harbors is prohibited.

ATTACHMENT H - DILUTION MODEL INFORMATION

In the process of issuance of a prior order for the Encina Ocean Outfall (EOO) discharge, Order No. R9-2005-0219 adopted by the San Diego Water Board on December 14, 2005, the San Diego Water Board performed modeling and calculations to determine the minimum initial dilution value for the EOO. The minimum initial dilution value was determined to be144 parts seawater to 1 part wastewater (144:1) for the discharge of up to 43.3 MGD of effluent through the EOO. This minimum initial dilution value was used to develop effluent limitations in both Order No. R9-2005-0219 and the subsequent Order No. R9-2011-0019 which was adopted by the San Diego Water Board on April 13, 2011. For this Order, flows for the EOO, documented in the Report of Waste Discharge (ROWD) are the same as those used as the basis for effluent limitations in the two prior Orders. Accordingly, the previously established basis for the minimum initial dilution value of 144 is incorporated by reference into this Order for use in the calculation of effluent limitations. A description of the San Diego Water Board's procedures in determining the minimum initial dilution value, included as Attachment G in Order No. R9-2005-0219, is presented below for background information.

Dilution Model Information as Presented in Attachment H of Order No. R9-2005-0219

The San Diego Water Board determined the minimum initial dilution factor for the discharge of up to 43.3 million gallon per day (MGD) of effluent through the EOO to be 144 using the USEPA-approved computer modeling package, Visual Plumes with the UM3 model. The computer modeling was performed using EOO design characteristics and receiving water density data provided by the Encina Wastewater Authority (EWA or Discharger) for the 12-month period July 2003 through June 2004 and average effluent temperature characteristics. The visual Plumes model package is limited to modeling diffusers with ports all pointing in one direction, while the EOO features ports discharging on both sides of the outfall diffuser. To determine EOO minimum initial dilution (lowest average initial dilution in any month of the year), the San Diego Water Board used the Visual Plumes and UM3 model package to simulate initial dilution under two scenarios. Scenario 1 simulated conditions on each side of the EOO by applying half of the EOO flow through the diffuser ports on that respective half of the outfall; this scenario is appropriate when the discharges from each side of the diffuser do not interact. Scenario 2 simulated conditions in which the total EOO flow is discharged through all the EOO diffuser ports, discharging in the same direction; this scenario simulates conditions when the discharges from each side of the diffuser strongly interact and is a more conservative approach. Minimum initial dilution factors under these two modeling scenarios were approximately the same; however, the results from Scenario 2 modeling were used to determine the minimum initial dilution factor for this permit renewal. These dilution model results are summarized in Table H-1.

Table H-1: Summary of Visual Plumes Dilution Model Results.

Ambient Profile	Effluent Temperature (°C)	Dilution Factor at Last Trap Level	Dilution Factor at Surface
Jan-04	21.3	No Result	261.2
Feb-04	21.1	125.3	148.2
Mar-04	22.0	152.8	No Result
Apr-04	22.5	143.9	No Result
May-04	23.7	152.4	No Result
Jun-04	24.4	185.7	194.4
Jul-03	25.4	162.7	191.5
Aug-03	25.6	158.7	189.1
Sep-03	25.5	148.8	181.5
Oct-03	24.6	137.1	57.7

Nov-03	23.3	126.3	147.2
Dec-03	21.9	143.5	No Result

For each month and for each Visual Plumes run, initial dilution was interpreted to occur either when the plume first reaches the surface, or at the last trapping level when the plume does not surface. The minimum initial dilution was the lowest dilution factor attained using the December 2003 ambient profile.

Information about the EOO and the outfall diffuser were obtained from the EWA's ROWD Supplemental Information (October 2005) and *EWA Ocean Outfall Disposal Capacity Report* (February 28, 1996). The following information and assumptions were used for the input into the model:

Port Diameter – 2.775 inches – Average of forty-four 2.5-inch diameter ports, forty-four 2.75-inch diameter ports, forty-eight 3-inch diameter ports, and two 4-inch diameter ports.

Port Elevation – 4 feet.

Vertical Angle – 5 degrees.

Horizontal Angle – 0 degrees – The EWA indicated that diffuser ports alternated facing 0 degrees and 180 degrees. This model does not have input abilities for a diffuser with ports facing various directions. A single direction for all ports was assigned. This will result in a conservative dilution factor.

Number of Ports – 38 ports.

Port Spacing – 6 feet (half of true spacing between ports on each side of the diffuser).

Acute Mix Zone – Not relevant, value does not affect dilution factor as defined by the State Water Resources Control Board (SWRCB).

Chronic Mix Zone – Not relevant, value does not affect dilution factor as defined by the SWRCB.

Port Depth – 151.5 feet.

Effluent Salinity – 1.48 practical salinity unit (psu) – This value is based on total dissolved solids concentration information contained in the March 2003 ROWD submitted by the EWA in support of Addendum no.2 to Order No. 2000-0036.

Effluent Temperature – See Table 1. The effluent used for modeling for each month is the average of monthly temperature data for the period 2002-2003.

Effluent Concentration – Not relevant, input does not affect dilution factor.

Ambient Data – Monthly ambient data for July 2003 through June 2004 obtained for the 2003-2004 offshore intensive receiving water monitoring program conducted by the EWA. Salinity and temperature data taken at offshore monitoring stations G1, G2, Z1, and Z2 were averaged at each depth and the average values were used in Visual Plumes.

Far-Field Diffusion Coefficient – 0.0003 m0.67/s2 – recommended in the Visual Plumes manual as a conservative value.

Special Settings Tab, Far-Field Diffusivity Option – 4/3 Power Diffusivity was chosen based on the fact that the discharge is occurring in open water.

Special Settings Tab, Diffuser Port Contraction Coefficient – 0.61 – based on the use of cylindrical ports in the diffuser.

Special Settings Tab, Standard Light Absorption Coefficient – 0.16 – recommended in the manual as a conservative value.